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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,143	07/09/2003	Masahiko Kubota	03500.017372	8082

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EXAMINER	
GORDON, RAQUEL YVETTE	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,143	KUBOTA ET AL.	
	Examiner	Art Unit	
	Raquel Y. Gordon	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/9/2003 (This application)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *5 and 6* is/are allowed.

6)☐ Claim(s) *1* is/are rejected.

7)☒ Claim(s) *2-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/03, 1/04, 7/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-15 rejected under 35 U.S.C. 102(b) as being anticipated by Ohkuma et al (EP 0734866 A2).

Ohkuma et al. teach every element of the instant claims including:

1. A method for producing a liquid discharge head including: a discharge energy generating element for generating energy for discharging a liquid droplet (2); an element substrate (1) provided with said discharge energy generating element on a principal plane thereof; and an orifice substrate (top portion of fig 31) provided with a discharge port (9) portion including a discharge port for discharging a liquid droplet, a bubble generating chamber (8) for generating a bubble in a liquid therein by said discharge energy generating element, a nozzle (9, 20 in figure 32) including a supply path (4a) for supplying said bubble generating chamber with the liquid, and a supply chamber (8) for supplying said nozzle with the liquid, and adjoined to the principal plane of said element substrate (see figs 24 and 25),

the method comprising: a step of coating, on the element substrate in which said discharge energy generating element is provided on the principal plane, a solvent-soluble thermally crosslinkable organic resin for forming a pattern of a first bubble

generating chamber and a first flow path and heating the resin thereby forming a thermally crosslinked film (see abstract and page 12, lines 32-36) ;

a step of coating (6), on said thermally crosslinked film, a solvent-soluble organic resin for forming a pattern of a second bubble generating chamber and a second flow path see page 10, lines 3-10);

a step of forming, in said organic resin, a second flow path pattern (3) of a smaller height than in said second bubble generating chamber simultaneously with a pattern of said second bubble generating chamber, by employing a locally different exposure amount (see page 10, lines 3-10);

a step of laminating a negative-working organic resin layer on said thermally crosslinked film and said patterned organic resin and forming said discharge port portion in said negative-working organic resin layer (see page 12, line 25, page 13, lines 36-39, and page 14, line 1);

and a step of removing said thermally crosslinked film and said patterned organic resin (see 14, lines 9-25) .

Allowable Subject Matter

Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5 and 6 are allowed.

Reasons for Indication of Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter: The following claimed limitations are not found in the prior art of record.

2. A method for producing a liquid discharge head according to claim 1, wherein the pattern of the second flow path having a lower height than in said second bubble generating chamber is formed by an exposure of said organic resin, employing a slit mask having a slit pitch and the developing said organic resin;

3. A method for producing a liquid discharge head according to claim 1, wherein the pattern of said second bubble generating chamber and said second flow path is formed, after an exposure-development step through a mask, by a formation of an inclination of 10.degree. to 45.degree. by the application of a temperature;

4. A method for producing a liquid discharge head according to claim 2, wherein said second flow path pattern is formed with two or more step differences by exposing and developing said organic resin, utilizing a mask having different slit pitches.

Further, while claim 5 is taught in part by Ohkuma et al., Ohkuma et al. does on teach each element of the claimed (bolded and underlined with emphasis below. Further, claim 6 depends from an allowed base claim:

5. A method for producing a liquid discharge head including: a discharge energy generating element (3) for generating energy for discharging a liquid droplet; an element substrate provided with said discharge energy generating element on a principal plane

thereof (1); and an orifice substrate (top section of figure 31) provided with a discharge port portion including a discharge port (9) for discharging a liquid droplet, a bubble generating chamber (8) for generating a bubble in a liquid therein by said discharge energy generating element, a nozzle (9, 20 in figure 32) including a supply path (4a) for supplying said bubble generating chamber with the liquid, and a supply chamber (8) for supplying said nozzle with the liquid, and adjoined to the principal plane of said element substrate, the method comprising:

a step of coating (6), on the element substrate in which said discharge energy generating element is provided on the principal plane, a solvent-soluble thermally crosslinkable organic resin for forming a pattern of a first bubble generating chamber and a first flow path and heating the resin thereby forming a thermally crosslinked film (page 12, lines 32-36);

a step of coating (6), on said thermally crosslinked film, a solvent-soluble organic resin for forming a pattern of a second bubble generating chamber and a second flow path;

a step of exposing and developing said organic resin employing a slit mask having partially different slit pitches and a near-UV light, in order to form a pattern of said second bubble generating chamber and a second flow path having different plural heights; a step of heating said organic resin, subjected to the pattern formation by exposure and development, at a temperature not exceeding a glass transition point thereby form an inclination of 10.degree. to 45.degree.; a step of exposing and developing said thermally crosslinked film employing a

deep-UV light of a region of 200 to 300 nm; a step of coating, exposing, developing and heating a negative-working organic resin on the flow path pattern formed by said two-layered solvent-soluble film, thereby laminating said orifice substrate having said discharge port portion; and a step of irradiating, through said orifice substrate, the underlying two-layered organic resin for forming the flow path with a deep-UV light, followed by removal with a solvent, thereby forming said orifice substrate including said discharge port portion for discharging a liquid droplet, said bubble generating chamber in which the bubble is generated by said discharge energy generating element, said nozzle having said supply path for supplying said bubble generating chamber with the liquid, and said supply chamber for supplying said nozzle with the liquid, and adjoined to the principal plane of said element substrate.

6. A producing method for a liquid discharge head according to claim 5, wherein said first flow path is formed with a height of 5 to 20 .mu.m on said element substrate and with an inclination of 0.degree. to 10.degree. with respect to a plane perpendicular to the principal plane of said element substrate.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Raquel Y. Gordon, whose telephone number is (571) 272-2145. The Examiner can normally be reached on M Tu Th and F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. A fax number is available upon request.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the Examiner or Supervisor.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raquel Y. Gordon
Primary Examiner
Art Unit 2853
January 7, 2004

RAQUEL GORDON
PRIMARY EXAMINER